Introduction of Liquid Petroleum Gas (LPG) in Motor Vehicles

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Ministry of Science & Technology

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Outline

- LPG Usage Patterns
- LPG Vehicle Population
- Technology for LPG Utilization
- Overview of Vehicle Products
- Overview of Safety Standards
- Additional Information Needs

LPG Usage Patterns in United States

- LPG(1998):
  - 253 Million Gallons (Equivalent)
- Oxygenates (1998):
  - 3.7 Billion Gallons (Equivalent)
- Gasoline (1996):
  - 107 Billion Gallons

LPG Vehicle Population (1996)

- Light Duty Vehicles:
  - LPG - 210 Thousand
  - Total - 130 Million
- Heavy Duty Vehicles:
  - LPG - 53 Thousand
  - Total - 6 Million

[Use is stable in the total vehicle population]

Technology for LPG Utilization in US

- Technology for light duty vehicles has migrated to Electronic Fuel Injection
- LPG vehicles use port injected EFI to provide correct fuel quantity to each engine cylinder
- Exhaust catalysts are needed to meet increasing stringent emissions regulations

Technology for LPG Utilization -2

- Trend in emissions regulations is that all light duty vehicles must meet same emissions levels for all fuel types
- Prevailing trend in US is to “clean up” gasoline and diesel fuels
  - Reduce sulfur content
  - Reduce aromatic content (of diesel fuel)

Overview of Vehicle Products

- Currently offered US vehicles are dual fuel
- Have tanks for LPG and gasoline
- Available as:
  - Large Pickup Trucks
  - Large Vans
- Other vehicles are available as after-market conversions

Overview of Vehicle Products

F-150 Pickup Truck

Clubwagon Van

Overview of Safety Standards (US)

- Federal Motor Vehicle SS No 303
- National Fire Protection Association No. 58
- Propane Cylinder Codes:
  - Department of Transportation
  - American Society of Mechanical Engineers
- Local regulations concerning: bridges, tunnels, and underground parking garages

Additional Information Needs

- MoST should define additional information and other needs